Immunity *25*, 1003, December 2006 ©2006 Elsevier Inc.

Erratum

Thymus Exclusivity: All the Right Conditions for T Cells

Hiromi Iwasaki and Koichi Akashi*

(Immunity *25*, 697–700; November 2006)

In the original Preview for Laiosa et al., we did not mention one of the authors' important findings. They showed that although the most primitive DN1 cells expressed a substantial amount of C/EBPα and PU.1, DN2-4 cells progressively downregulated these genes. By the enforced expression of myeloid transcription factors such as C/EBPα, C/EBPβ , and PU.1, they successfully induced myeloid reprogramming not only in DN1 cells but also in preT cells; approximately 85% of DN3 thymocytes and approximately 75% of DN4 thymocytes became macrophages after C/EBPα transduction. Those preT-cell-derived macrophages possessed polyclonal VDJ rearrangements verifying their T lineage origin. The enforced expression of PU.1 in preT cells also induced conversion into "myeloid" dendritic cells. These are the first evidence that preT cells could be reprogrammed into the myeloid lineage by the ectopic "instructive" signaling from myeloid transcription factors. Figure 1 is now modified to include this important finding. The authors regret this error.

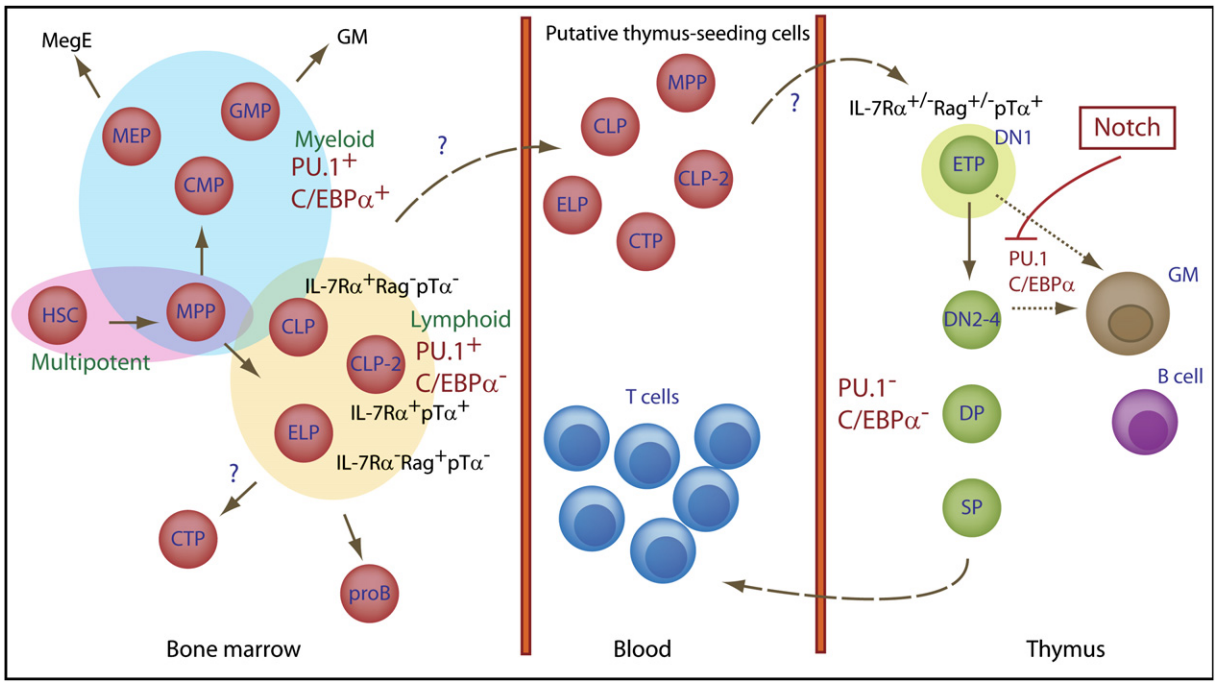

Figure 1. T Cell Lineage Restriction from Multipotent Hematopoietic Stem Cells

In the bone marrow, hematopoietic stem cells give rise to a variety of phenotypically identifiable myeloid and lymphoid progenitors. At least five independent populations might be able to seed the thymus. Multipotent progenitors (MPPs) with short-term reconstituting activity can differentiate into all lymphoid and myeloid cells. Three "lymphoid" progenitor fractions, the common lymphoid progenitor (CLP), the CLP-2, and the earliest lymphoid progenitor (ELP), were purified based on the expression of IL-7Rα, Rag1, and pTα (Traver and Akashi, 2004). These three lymphoid progenitor subsets display robust T and B cell reconstitution activity, whereas ELPs retain minor GM potential. The committed T cell progenitor (CTP) can also be isolated in the bone marrow. All five populations can home to the thymus because they generate T cells after intravenous transplantation. In the thymus, the primitive DN1 fraction contains the early thymocyte precursor (ETP). ETPs and DN1 cells are early progenies of thymus-seeding cells. The majority of DN1 cells express myeloid genes such as PU.1, C/EBPα, C/EBPβ, and the lys-GFP knockin reporter, and a fraction of them can differentiate into myeloid cells in vitro. **The bone marrow CLP, thymic proT (DN1, 2), and even the thymic preT (DN3, 4) cells can display plasticity for myeloid development with enforced expression of transcription factors such as PU.1 and C/EBPs. In the thymic microenvironment, Notch signaling prevents thymic precursors from committing to the GM (and B cell) lineages by antagonizing PU.1 and C/EBPα (Laiosa et al., 2006).** MegE, megakaryocyte and erythrocyte; GM, granulocyte and monocyte; CMP, common myeloid progenitor; GMP, granulocyte and monocyte progenitor; MEP, megakaryocyte and erythrocyte progenitor.

*Correspondence: koichi_akashi@dfci.harvard.edu

DOI: 10.1016/j.immuni.2006.11.004